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MÁQUINAS MESTIZAS

MAGMA

Hydrophone and Contact Microphone

Date: Oct 2024

Magma is an experimental and versatile analog device designed for both artistic expression and scientific research. Its hand-held construction combines piezoelectric transducers, neodymium magnets and cables with high-strength connectors that allow it to pick up vibrations in a wide variety of environments. Its amphibious design makes it suitable for exploring sound in environments such as water, land, natural landscapes, urban environments, domestic spaces and recording studios.

This multifunctional device acts as a contact microphone and hydrophone, capturing everything from the vibrations of moving water to the sounds of marine wildlife, such as whale songs. Its saltwater-resistant aluminum capsule and magnetic tip allow it to be attached to metal structures, parts or instruments, ideal for exploring resonance and sound textures through percussion or adhesion.

Magma connects easily to field recorders, mixer amps, or effects pedals, enhancing its electroacoustic and performative facet.

Pre-amplification: Magna does not require phantom power. If you want to increase its gain, for example for real time reproduction of whale songs in a speaker; you can add one of the preamplifiers that we built in Mestiza Machines based on the TL072 circuit (high impedance and low noise).

Máquinas Mestizas offers artistic experiences and affordable, quality technological solutions for the recording, experimentation and appreciation of the sounds of nature, promoting deep listening, environmental conservation and technological sovereignty.

About the manufacturer
https://jorgebarco.wixsite.com/maquinasmestizas
Audios and documentation https://archive.org/details/@nuevonomada
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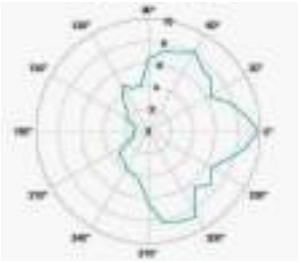
Features
Directivity: Omnidirectional
Cable length: 2.10 m standard version. For marine acoustics up to 15 m on request.
Cable sheath: polyurethane, outer diameter: 4.5 mm
Capsule: Anodized or polished aluminum sphere, 55 mm in diameter and 1 mm thick.
Output connection: mono jack, XLR, TS/TRS, or minijack upon request
Weight: 250 grams or more, depending on the cable length
Materials: Aluminum, piezoelectric transducers, brass, copper, neodymium magnets, resins and rubber.

Acoustic analysis
Impedance: 675.32 Ω
Signal-to-noise ratio 31.7 dB RMS Sensitivity -
53.15 dB
Useful range: 10 Hz to 70 KHz approx.

Average directivity



Magma uses 55 mm quartz ceramic transducers and neodymium imported from Japan. Cable color varies according to market availability. It has a 3-month warranty against detachment or leaks; you pay the shipping costs and we restore or replace it. In the shipping packaging we seek to recycle materials. Neodymium magnets may cause interference with pacemakers and other electromagnetic devices.
Pull the cable !

A general list of possible uses and actions with Magma:

Underwater recording: Immerse Magma in moving water ... drops, bubbles and currents. Listen to the songs of whales, dolphins and other sea creatures by turning up the gain on your field recorder or adding a pre-amplifier. Experiment with different depths and locations.

Sound performance: Use Magma in live performances to explore the sound properties of various elements and the body in real time; with sufficient gain it is possible to hear the heart.

Recording Musical Instruments: Attach Magma to instruments such as guitars, calimbas, harmonicas - toys - or explore unconventional parts of these.

Explore metal and everyday objects: Use Magma's magnetic tip to attach to metal surfaces and percuss, tap or scrape to create unique sounds. Experiment with objects such as glasses, plates and toothbrushes to discover new sound textures.

Interaction with the wind: Adheres Magma to fences or ropes in intense wind circulation to capture sound variations, as if it were an aeolian harp.

Interaction with natural materials: Captures vibrations and resonances when using Magma in contact with wood, stone, earth, sand, seeds and rocks.

Experiment with sound effects: Connect to a mixer or amplifier and add effects such as delays, reverbs, and distortions to create soundscapes or feedback.

Urban Experiments: Attaches Magma to urban structures, such as traffic lights and poles, and percusses to obtain sounds. Captures vibrations in bridge junctions or telephone racks (some electromagnetism).

Use of Vessels: Immerse Magma in glass, metal or wooden vessels to hear how the vibrations of a drop of water are amplified differently.

Amplifies your cat's purr.

Adhere Magma to train or streetcar rails, be careful!
https://www.instagram.com/p/DAmEG8Qp6FP/?img_index=1
https://www.instagram.com/p/CmpTUE5rspu/
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https://www.instagram.com/p/CqDmDi6thMY/
https://www.instagram.com/p/CijRaTUuEZW/

Study Materials:

- Marine soundscapes, deep listening in the service of conservation:
https://agendadelmar.com/paisajes-sonoros-marinos-la-escucha-profunda- al-servicio-de-la-conservation/
-Text: The contact microphone: a cultural object. Daniela Fantechi
https://routledgetextbooks.com/textbooks/9780367210106/culture_history. php
- Between air and electricity, microphones and loudspeakers as musical instruments. Cathy van Eck
https://microphonesandloudspeakers.com/
-Text: Guide to working with piezoelectrics with children on acoustic ecology, sound and creativity. Richard Lerman
https://www.public.asu.edu/~rlerman/PDF%20Files/Children%20&%20Piezo%20disks.pdf
- Documentary: Sound Fields: Adventures in contemporary field recording
https://www.youtube.com/watch?v=esfUwg1-xrI
- Podcast: The acoustics of the seabed
https://open.spotify.com/episode/53d1Ngfr4gVmsdAAlTdxBW?si=E5yPh-LSQ92-7xpZJ5sFWA&nd=1
- Performance: Cartridge Music by John Cage. Film by Helen Petts.
https://www.youtube.com/watch?v=VaNHAswN2hU&list=PLRI72Wws_JkBB0ZFi0aG3piMHHmqaYyBW
Experiments with fire and pieces: Richard Lerman
https://www.youtube.com/watch?v=JRqQcVbBBgw&t=1s